Agenda: Toxics Use Reduction to Achieve Enhanced Pollution Prevention

Indiana Department of Environmental Management, September 27, 2016

Topic	Description	Approx Timing	Objectives
1 Introduction to Toxics Use Reduction	What is Toxics Use Reduction (TUR)?	**8:15am to 9:00am (45 min)**	• Discuss the evolution and context for toxics use reduction (TUR) • Understand the central role of planning in achieving TUR • Differentiate between TUR, pollution prevention and pollution control, and understand why the differences are important • Identify TUR techniques, and discuss examples of how they can be implemented
	Pollution Prevention vs Pollution Control		
	Pollution Prevention Hierarchy		
	Toxics Use Reduction Techniques		
	Historical Context for TUR		
	1970s - Pollution Control and cleanup		
	1980s - Crisis Management, Liability, and Toxics		
	1990s - Pollution Prevention		
	2000s - Emphasis on Management Systems and Higher Hazard Substances		
	TUR and Planning		
	Group Discussion: How does P2 and TUR relate to green chemistry?		• What is the connection to Indiana's P2 or Green Chemistry initiatives?
2 Process Characterization: Process Mapping	Introduction to Process Characterization	**9:00am to 10:00am (60 min)**	• Develop a visual representation of a production process • Assess a production process and determine the best way to divide it up into production units • Conduct a chemical pathway analysis of process • Understand units of product and their role in normalizing toxics use • Learn how to create pictorial representation of where toxics enter and leave processes
	Engaging with the Right Team		
	Process Mapping		
	Chemical Pathway Analysis		
	Defining the Unit of Product		
	Using Existing Process Maps		
	Conducting a Walk-around		
	Small Group Activity: Creating a Process Flow Diagram for Acme Electronics		
Break		**10:00 am to 10:15am (15 min)**	

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Topic	Description	Approx Timing	Objectives and Exercises
3 Process Characterization: Materials Accounting	Quantitative Analysis Byproducts and Emissions Sources of Data/Information Mass Balances Materials Accounting Techniques **Individual Exercises:** Various Materials Accounting Scenarios	**10:15am to 11:45am (90 min)**	• Determine how to assess materials use in a process • Identify appropriate units of product • Differentiate between byproduct and emission • Demonstrate and practice mass balance and materials accounting techniques • Describe how to do an inventory of toxic chemical use and account for all of the toxic chemicals used
LUNCH		**11:45am to 12:45pm (60 min)**	
4 Identifying TUR Opportunities	Engaging with a Team Toxics Use Reduction Techniques Sources of Information **Small Group Activity**: Identifying Options at Acme Electronics Being Systematic	**12:45pm to 2:15pm (90 min)**	• Understand why it is important to generate a range of TUR options • Learn tools and methods to help you generate TUR options
5 TUR Options Evaluation and Alternatives Assessment	Screening out Options Assessing Chemical Substitutions Safer Alternatives Assessment Process Gathering Data on Chemicals **Small Group Activity**: Characterizing Flux Remover at Acme Electronics Evaluating Technical Feasibility Evaluating Economic Feasibility **Small Group Activity**: Performance and Cost Evaluation of TUR Options at Acme Electronics Pilot Testing The Business Case for Implementation	**2:15pm to 4:00pm (105 min)**	• Consider technical, environmental and human health and safety, and economic criteria when assessing the feasibility of TUR options • Develop appropriate screening procedures for potential TUR options • Conduct appropriately thorough evaluations of options, including assessment of safer chemical alternatives • Develop systematic procedures for choosing TUR options to implement.
Wrap up	**Large Group Discussion:** How can you bring TUR into your P2 technical assistance activities?	**4:00pm to 4:15pm (15 min)**	• Clarifying questions • Class Evaluation